

THE DEVELOPMENT OF INDIAN DEFENCE MANUFACTURING INDUSTRIES

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Abstract

India's defence manufacturing sector has transformed from the dominance under the Defence Public Sector Undertakings (DPSUs) and the Ordnance Factory Board (OFB) to a more diversified ecosystem that includes private sector companies and MSMEs. This article examines the growth trajectory and frames it within the broader reforms that have been taken place since 2014 and strive to increase defence exports, improve, encourage indigenous innovation and reduce dependence on imports. In addition, the article also highlights significant achievement in production and exports, it also opens continuing challenges such as reliance on technology, financial difficulties, delays in procurement and decentralised R& D. With the goal to achieve strategic self-reliance, the study holds that enhanced technology development, economical procurement, MSME assistance and intense export promotion are essential for equitable growth and development.

Keywords:- Defence Manufacturing, Atmanirbhar Bharat, Make in India, DPSU, MSME

India is one among the most powerful military forces in the world and it is strategically significant for the Indian Government. The Indian defence manufacturing industry is going through an exponential boost and growth in self-reliance through Make in India initiatives and other key

programmes by the Government of India. As India embarks on the path of Atmanirbhar Bharat (self-reliance) all major military powers, has been making sustained attempts at indigenously meeting its defence requirements. To emerge as a global defence exporter, strengthen self-sufficiency and reduced dependency on

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imports India has been rapidly working to strengthen its aerospace and defence manufacturing capabilities. To raise the domestic production and promote private sector participation and drive innovation in various defence technologies the government has brought out several policy measures and regulatory changes.

The growing involvement of private sector companies in Indian defence industry constitutes an unprecedented shift from the classic dominance of Defence Public Sector Undertakings (DPSU) and ordnance factories. The active engagement of the private sector has provided defence production necessary competition, innovation and creativity to the forefront.

The Atmanirbhar Bharat initiative (2020) marked as an important milestone, creating challenging goals for minimizing imports, developing indigenous manufacturing, and integrating MSMEs into the supply chain. The new policy thrust is apparent in the creation of defence industrial corridors in Uttar Pradesh and Tamil Nadu along with the privatization of the Ordnance Factories into seven new DPSUs.

Given a focus on the transition from DPSUs to MSMEs, this article critically evaluates the rapid growth of defence manufacturing industry and positions it beyond the transformation in the context of global standards.

Review of Literature

The literature on defence industrial economics emphasis the state's function as a monopsonist buyer, influencing the trade-offs between efficiency, strategy and

supply security (Hartley, 2019). Procurement frameworks that support small businesses and stimulate a transition from licensed production to indigenous design are outlined in studies like (Markowski, Hall&Wylie, 2009). The approach is mirrored in India's policy direction. In India, strategic initiatives like the Defence Acquisition Procedure (DAP 2020) seek to promote indigenisation and domestic production but certain obstacles in implementation remain (Cowshish,2020). The increasing involvement of MSMEs and private firms has promoted innovation, still challenges such as financial constraints and delayed payments hinder their role.

Though defence production has risen considerably (MoD, 2024), studies indicate that a significant portion of growth remains associated with licensed manufacturing rather than deep technological competence (Shukla, 2023; Mehta,2022). Generally, the existing literature often examines the policy, institutions and industry in a separate context, leading to a lack of understanding in which these factors interdependently influence real self-reliance in the sector (Hartley, 2019)

Background of India's Defence Manufacturing Industry

India's defence manufacturing sector can be understood as a phased transition, from a state dominated system to a diversified and policy driven ecosystem. In its initial stages, it was largely built around the Ordnance Factory Board (OFB) and Defence Public Sector Undertakings (DPSUs), which operated within a state-led framework where

private participation was almost absent. Though this structure facilitated in the licensed production of major defence platforms and contributed to establishing baseline industrial capacity. However, its continuous dependence on external technologies and limited scope for competition hampered the development of indigenous innovation.

The structural inefficiencies of the system became more evident as time progressed. The overall performance was influenced by factors such as delays in production, quality issues and conventional manufacturing practices. Also, the emergence of a rapidly evolving and competitive environment was hindered by the absence of integration with MSMEs and private firms thus limiting both innovation and supply chain resilience.

The period after 2014 stands for a transition to a framework which is more inclusive and reform oriented. Introduction of policies relating to Indigenisation, increased private sector participation and procurement restructuring helped the sector move towards greater efficiency and self-reliance. Institutional measures, including organisational restructuring and the establishment of new administrative mechanisms, have also supported in this transition. Parallel attempts to support MSMEs, start-ups and innovation ecosystem also broadened the sector.

In spite of these advancements, several structural challenges exist. Continuing reliance on foreign technologies in critical areas, delays in procurement procedures, disorganised research and development efforts, and

financial constraints affecting MSMEs remain key problems. These concerns indicate that though the sector has moved towards diversification and improved output, the level of transformation especially in terms of technological capability and integration remains confined.

Overall, the sectoral overview shows a system in transition; where policy intent and institutional reforms have contributed to change, but structural challenges continue to influence outcomes. This analytical approach provides a basis of examination on how these interacting factors shape the trajectory of India's defence manufacturing sector in terms of self-reliance and global competitiveness.

Scope of the Study

This study examines the growth of India's defence manufacturing sector, particularly after the period of 2014. It includes major governmental policy initiatives like Make in India and Atmanirbhar Bharat, as well as changes in defence procurement frameworks. It also considers institutional breakthrough such as the corporatisation of the OFB and the establishment of defence industrial corridors. The study also analyse how the private sector participation has expanded, and how MSMEs are fitting into the larger supply chain, and the advancements made in terms of production and exports. Meanwhile, it is important to acknowledge the limitations. The analysis primarily depends on secondary data; hence no firm level observations or classified defence information are used. This consequently restricts the scope of the analysis.

Significance of the Study

This study is significant both academically and in view of a policy angle, though there is an overlap between the two domains. From an academic perspective, it adds to the debate on the evolution of defence industries particularly in countries transitioning from state dominated systems. India is currently in the middle of the transition, either completely advanced or at its earlier level. The study also examines the role of MSME and innovation environments which has become critical in strategic sectors.

From the point of view of policy, it intends to measure how effective recent reforms have been. Besides what they were to accomplish but also what they have achieved so far. This can be advantageous to policymakers, researchers and industry players who are attempting to understand where the things are headed. Then there is the overall goal of India becoming the global defence leader. In that context, the study highlights several key factors that will be decisive soon, including the capability to sustain growth in exports, competitiveness and technology.

Statement of the Problem

India's defence manufacturing sector has, remained primarily dependent on imports regardless of investment particularly when it comes to high-end technologies like aero-engines, advanced electronics, and precision systems Defence Public Sector Undertakings (DPSUs) and the Ordnance Factory Board (OFB), dominated the market for a long period creating a closed system. Although it

helped in the creation of a foundation, it simultaneously resulted in limited competition, restricted innovation and inadequate opportunities for private entities to effectively engage.

Initiatives like Make in India and Atmanirbhar Bharat were introduced post 2014 with the sole aim of pushing indigenisation, encouraging private participation, and to enhance exports. Though to a certain degree they have accomplished it, but the ground reality remains complex due to procurement delays, MSMEs struggle with financial and operational issues, disorganised R&D efforts, and dependence on foreign OEMs for critical technologies.

Although significant policy efforts, have been worked out the Indian Defence manufacturing sector continues to face structural issues including reliance on foreign technologies, inefficient procurement and lack of integration with MSMEs. Though the reforms initiated since 2014 aimed to enhance indigenisation and private sector participation, their impact has been lacking inconsistency. Therefore, this study attempts to evaluate whether these reforms have been successful in transforming this industry into a competitive and self-reliant ecosystem.

Objectives of the Study

- To examine the evolution of India's defence manufacturing sector from DPSU–OFB dominance to a diversified ecosystem.
- To analyse the effects of policy reforms undertaken since 2014 on indigenisation and industrial growth.

- To assess the crucial role of private sector firms and MSMEs in defence production.
- To identify key challenges and suggest measures for promoting self-reliance and global competitiveness.

Methodology

This study adopts a qualitative and descriptive approach, focusing on understanding the transformation of India’s defence manufacturing sector rather than measuring it through quantitative models. The analysis is based on secondary data drawn from

government reports, policy documents, and academic literature, which together provide a broad view of sectoral development though they may not fully capture ground-level realities.

The study uses policy analysis and thematic interpretation to examine key reforms and their outcomes, particularly in terms of production, exports, and industry participation. By comparing policy intent with actual trends, it attempts to identify gaps and structural challenges keeping the approach flexible, even if a few areas remain open-ended.

Table 1
Growth of India’s Defence Production and Exports

Year	Defence Production (₹ Crore)	Defence Exports (₹ Crore)
2014-2015	43,000	1,9401
2018-2019	80,502	10,745
2020 -2021	86,643	8,434
2022 -2023	1,08,684	15,920
2023-2024	1,27,000	21000

Source: Ministry of Defence. (2024). Annual report 2023-2024, Government of India; SIPRI. (2025). Trends in International Arms Transfers 2024.

Table 2
Major Reforms in Indian Defence Sector Since 2014

Reform	Objective	Impact
Make in India (2014)	Increase domestic manufacturing	Encourage private sector participation
Defence Procurement Procedure (DPP) 2020	Promote indigenisation	Increased MSME involvement and local procurement
Atmanirbhar Bharat (2020)	Reduce reliance on import	Development of indigenous manufacturing
OFB Corporatisation (2021)	Improve productivity and accountability	Restructuring of DPSUs into seven
Defence Industrial Corridor	Create manufacturing clusters	Growth and investment of regional industrial areas

Source: Comshish, A. (2020). Decoding Defence Acquisition Procedure 2020; Ministry of Defence Policy Documents.

Inferences and Discussion

The analysis confirms that the defence manufacturing in India has seen a gradual shift from a DPSU-OFB dominated system to a more varied ecosystem that includes private firms, MSMEs and start-ups. Reforms introduced after 2014 mainly under Make in India and Atmanirbhar Bharat, has increased domestic production, private sector participation and defence exports. These reforms have contributed to the overall growth of the industry and focussed on self-reliance.

The increase in production and exports signifies that India is slowly increasing its strength in domestic capabilities. But most of the growth still depends on licensed production and imports. India is still reliant on foreign OEMs for critical systems like aero-engines, propulsion technologies, sensors, and advanced electronics which prevents technological self-reliance.

The study also shows that MSMEs and private firms are playing a greater role in defence production specifically in areas of AI based systems, robotics and drones and also has improved innovation and competitiveness within the sector. However, their operations remains

hindered by delayed payments, strict compliance procedures and their restricted access to secure long-term funding.

Overall, the defence manufacturing industry in India has seen significant growth in production, exports and industrial development. But the challenges related to technological dependence, procurement delays and lack of coordination slows down the transformation process. The creation of indigenous development and enhanced institutional support will be vital for achieving long term self-reliance.

Findings

The study finds that the Indian defence manufacturing sector has, slowly transitioned from the dominant DPSU-OFB structure to varied industrial ecosystem includes private firms, MSMEs and start-ups. Reforms introduced after 2014, under Make in India and Atmanirbhar Bharat seem to have played significant role in facilitating this transformation through substantial increase in domestic production, enhancement in exports and participation across the sector has expanded throughout the years.

Table 3
Key Challenges of Indian Defence Manufacturing Sector

Area	Challenge	Impact
Technology	Reliance on foreign OEM's	Limits technological self-reliance
Procurement	Procurement delays and bureaucratic procedures	Slows down implementation of the project
MSMEs	Financial and operational limitations	Limits operational growth
R&D Coordination	Lack of institutional coordination	Reduces efficiency
Exports	Restricted technological proficiency	Impacts global competitiveness

Source: Compiled from Hartley (2019), Mehta (2022), and Shukla (2023)

The study also further reveals that most of this growth is centred on licensed manufacturing and assembly-based production, rather than fully indigenous technology development. Dependence on foreign OEMs for critical systems like aero-engines, propulsion technologies, sensors, and advanced electronics continue to remain as a major concern and might be one of primary concern that keeps us from being self-reliant.

The growing prominence of MSMEs and private firms within the defence ecosystem is another major observation. Their involvement has contributed to some degree of innovation, flexibility and competition across the sector particularly in areas such as drones, robotics, AI-based systems, and advanced materials. In spite of these progresses, MSMEs continue to encounter various practical challenges. Their capability to expand and sustain its operations remains hampered by delayed payments. Thus, the fact remains that despite of increased participation, integration remains to be unequal.

The study also highlights that the procurement and institutional coordination continue to be areas of concern. Although, procurement reforms have simplified numerous procedures, delays and bureaucratic complexities continue to hinder implementation in practices. Similarly, the coordination between DRDO, DPSUs, private firms, and academic institutions seems inconsistent, resulting in reduced efficiency.

The findings also indicate that defence exports in India are consistently improving, but it still mainly focuses on specialised products and markets. To

expand exports in a sustainable manner, it is vital to establish a stronger technological reliability, ensure reliable after sales- support and create long term strategic partnerships.

Suggestions

The study suggests that focus should be on indigenous technology development rather than on increasing the production. Long term investments in critical areas should be made to reduce the dependence on foreign OEMs. It also highlights the importance of strengthening the MSME participation through timely payment systems, easier access to funding, simplified compliance procedures, and improved testing facilities. These measures can make it easier for smaller companies to effectively integrate into the defence supply chain. Further, the procurement processes should be clearer and more transparent as well as time bound. Reducing delays in approvals and purchase procedures would improve the efficiency and encourage private sector participation to endure. The study also recommends collaboration between DRDO, DPSUs, private firms, and academic institutions to improve R&D outcomes and avoid duplication of efforts. Finally, India ought to strengthen its defence export ecosystem through setting up dedicated export promotion mechanisms, better after sales support and strategic international partnerships. This would make India more credible and competitive in the global defence market.

Conclusion

The defence manufacturing industry in India has undergone a significant transition from a government owned

structure to a more diversified ecosystem inclusive of private firms and MSMEs. This shift is driven by series of policy reforms and initiatives aimed at reducing reliance on foreign OEMs and

boost domestic production. These initiatives have not only enhanced defence capabilities but paved the way for the nation to become a global manufacturing hub.

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